

THE STATUS AND DISTRIBUTION IN UGANDA
OF THE
WHITE-BELLIED KINGFISHER,
ALCEDO LEUCOGASTER LEOPOLDI

By HERBERT FRIEDMANN¹

ABSTRACT: Current surveys of the birds of the isolated forests of western Uganda have extended the known range of the white-bellied kingfisher, *Alcedo leucogaster leopoldi*, 170 miles to the east (Malabigambo Forest). The use of mist nets has revealed the need for a new appraisal of the numerical status of the bird, which is now shown to be surprisingly common, where previous collectors, without the use of such devices, had difficulty in obtaining single examples. The present series, the first sizeable one from any one locality, also suggests the existence of two sympatric color phases in this species.

The little white-bellied kingfisher, *Alcedo leucogaster leopoldi*, is a poorly known and seldom collected bird of the central African forests. In the Congo, over many years and by many collectors, it has been recorded from a good number of localities, summarized by Schouteden (1951, 1953, 1968), but these entail merely single or, at most, few specimens each, and with little or no observations. East of the Congo, it has been known only from extreme western Uganda, where it has been reported from Bwamba by Williams (1957, pp. 159-160) and by Friedmann (1966, pp. 22-23), each on the basis of a single specimen. South to Mwinilunga, in northwestern Zambia, Benson and Irwin (1965, p. 2) reported it along water courses in the Marquesia thickets. In the forests where it lives, it appears to be closely restricted to the vicinity of small well-shaded streams and of small wooded swampy glades, apparently seldom, if ever, getting into areas of bright sunlight. Chapin (1932, pp. 231-232) considered this specialized microhabitat a fairly recognizable ecological entity, and he concluded that this kingfisher was found only in such places, along with one other related species, *Alcedo quadribrachys guentheri*, and a few other kinds of birds. The other ecologically sympatric species were a heron, *Tigrisoma leucolopha*; two ibises, *Lampribus rara* and *L. olivacea cupreipennis*; one duck, *Pteronetta hartlaubii*; three rails, *Himantornis haematopus*, *Canirallus oculus*, and *Sarothrura pulchra centralis*; and a finfoot, *Podica senegalensis*.

In this microhabitat *Alcedo leucogaster leopoldi* appears to avoid competition with other similar predators on small fishes in shallow streams away from the forest. In this respect it resembles the case of the tiger heron, listed above, of which Chapin (1932, p. 423) wrote that it, "... is truly a bird of the forest, seldom to be seen along river banks, even where heavily wooded, but keeping

¹Director, Los Angeles County Museum of Natural History.

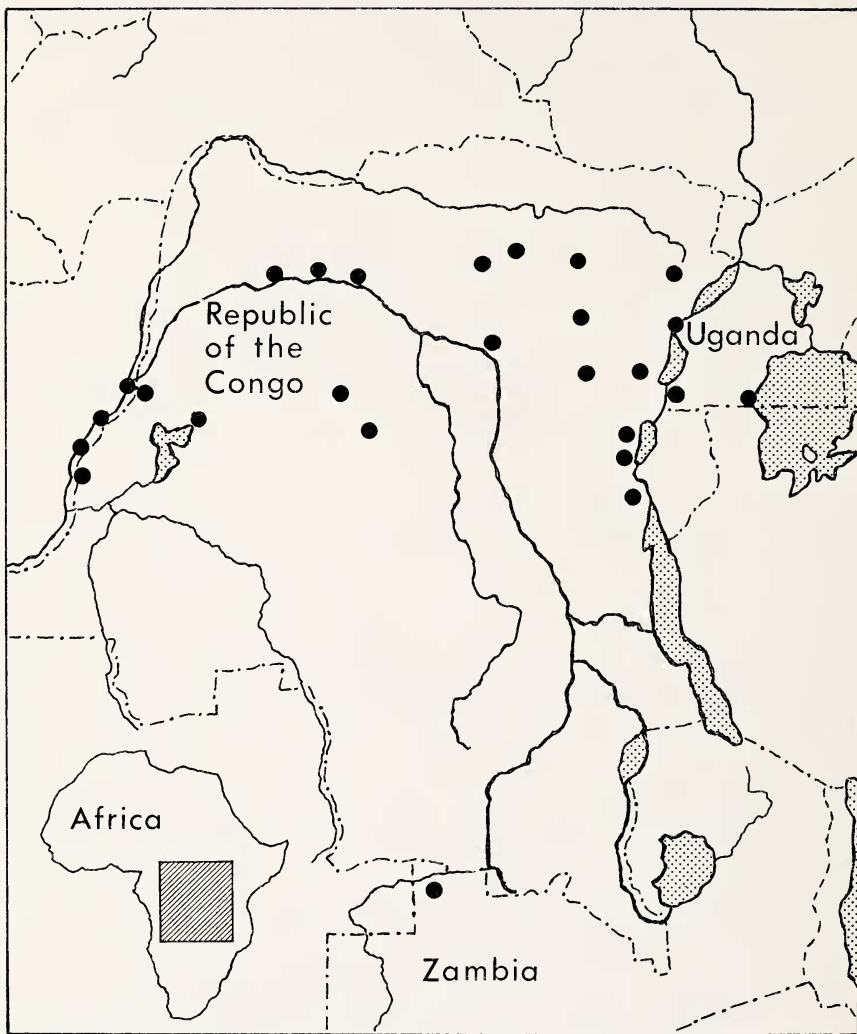


Figure 1. Distribution of the white-bellied kingfisher, *Alcedo leucogaster leopoldi*, in Uganda.

to the smaller streams entirely hidden within the depths of the forest, where the river herons evidently dare not venture. Thus, it needs never to compete with the purple heron or any of its better known relatives . . ." The other little kingfisher found with it along these waterways, *Alcedo quadribachys guentheri*, is, however, not restricted to them, but occasionally ranges far out

into extensive papyrus swamps, as at Kiyuyu, on the Lualaba River, where Chapin (1939, p. 292) was surprised to find it. The subspecies *thomensis*, inhabiting the island of São Tomé, has also been known to occur away from wooded streams. Snow (1950, p. 585) found it on the seashore, perching on pebbles, although he reported it in more usual locations as well.

In keeping with its adherence to the vicinity of water, this little kingfisher feeds extensively on small minnows. The stomach contents of four of our specimens held small fish bones and scales. It is also partly insectivorous in its diet, as insect fragments were present in the stomachs of two examples. In Cameroon, Serle (1950, p. 358) considered it primarily an insectivorous kingfisher. This is a matter of some biological interest as the kingfishers as a family are known to be both piscivorous and insectivorous, but most of their species are usually one or the other.

Chapin (1939, p. 288) concluded that in the Congo *leopardi* must be a very rare bird everywhere, as in over five years in that country he had met with it but a single time and had been able to obtain only one specimen (at Avakubi). He felt that only its general rarity could account for the fact that no one had found it along the heavily forested banks of the Ituri or the Aruwimi Rivers. In fact, as recently as 1922, when he first described the female plumage from his Avakubi specimen, Chapin (1922, p. 443) referred to it as the second known example of *leopardi*; all the other Congo records implied in the opening sentences of the present paper being later acquisitions.

In the past two years, under a National Science Foundation grant (GB-5107) to the Los Angeles County Museum of Natural History (LACM), extensive collecting in the forests of western Uganda, enhanced particularly by the use of mist nets, have caused us to change our evaluation of the numerical status of this bird, and to extend far to the east the limits of its range in Uganda. In the Bwamba forest, in a period of less than three weeks, from June 15 to July 3, 1967, no fewer than 11 specimens were obtained, clearly showing that it is a fairly common bird there. The species was not obtained in the Budongo, Bugoma, Kibale, or Impenetrable Forests, presumably because of the higher altitudes of those areas. However, surprisingly enough, it was met with again, and collected, in the Malabigambo Forest in the Sango Bay area, about 40 miles south of Masaka, on the northwest coast of Lake Victoria, some 170 miles to the east of its previously known range. Here an adult male in nonbreeding condition was collected on January 26, 1968, and another with slightly enlarged gonads was taken on February 4, 1968.

The two Sango Bay examples have relatively short bills, measuring 23.9 and 24 mm from the anterior end of the nostril to the tip of the maxilla, and are matched in this respect by one of the Bwamba males. All the other Bwamba specimens have longer bills, ranging from 25 to 27.5 mm in the males, and from 25.1 to 25.6 mm in the females. The difference, while quite small, is significant even though not wholly constant, with an average bill length of 26.1 in the Bwamba males as compared with an average of 23.95 mm in the two

Sango Bay examples. To the eye the difference looks larger than actual measurements show. Because the eastern Sango Bay population is known from two specimens only and one of the Bwamba series has a slightly shorter bill (23.7), it seems advisable to wait for further material before considering the advisability of separating the Sango Bay birds subspecifically, although their bill character is of interest as showing a microevolutionary trend. Small differences in bill dimensions, both in length and in height, and in wing length, are variable characters, which, in other segments of this species, have been found to have geographic correlation. Thus, the nominate race, restricted to the island of Fernando Poo, differs from *batesi* of the Cameroon, Gabon, and northern Angola by only a few millimeters. According to Amadon's findings (1953, pp. 420-421), *leucogaster* wing lengths average from 3 to 5 mm longer than in *batesi*, *bowdleri*, and *leopoldi*. Even in this slight character there is some altitudinal size variation in *batesi*, as Serle (1950, p. 358) reported that an example of that race taken at Bamenda, Cameroon, at 6000 feet, was as large as the Fernando Poo birds. The other subspecies of the Gulf of Guinea islands, *nais* of Principe and *thomensis* of São Tomé, are more distinctly different, having much more rufescent color on the underparts of the body.

Two Malabigambo specimens (LACM) show another difference in their bills, which are brighter, more orange-red, with less dusky brownish on the culminal ridge of the maxilla than are the bills of the Bwamba series. In this connection it may be recalled that Chapin (1939, p. 288) noted that Dubois's type of *leopoldi* (from Lake Leopold II) was plainly immature, with a dark colored bill, but added that "... even adults of *leopoldi*, such as ours from Avakubi, seem to have the bills largely dark brown, not wholly red as in *batesi* and the other western races." This much more basally restricted duskiness of the culmen in the two Sango Bay specimens, together with the relative shortness of their bills, does suggest incipient divergence from typical *leopoldi* in this remote and isolated population, a type of divergence seemingly present in the subspecies *batesi*, according to Chapin. Whether *batesi* averages less dusky culminal coloration is, however, open to question, as Rand, Friedmann, and Traylor (1959, pp. 282-283) found that in two males and one female *batesi* from Gabon the maxilla was blackish and the mandible red.

The present material is the first sizeable series from one locality of the race *leopoldi* available for study, and from an examination of it, it appears that the birds fall into what may almost be considered two color phases, as far as the terminal bars on the feathers of the forehead, crown, and occiput are concerned. About half of the Bwamba series and one of the Sango Bay birds have these narrow bars dark, varying from Rood's Blue to Helvetia Blue on the forehead and fore crown, and Salvia Blue on the feathers of the hind crown and occiput; the other half of both series have these bars much paler and slightly more greenish, very close to Squill Blue (colors *ex* Ridgway's nomenclature of colors). The birds are one or the other; there are no intermediates. It is of interest to note that the paler, more greenish color of these bars was

considered by Chapin (1939, p. 288) to be a racial character of the subspecies *leopardi*, but this conclusion was based on a very small and inadequate series of only one example of each sex, only one of which was adult. This presumed character was repeated as diagnostic in White's (1965, p. 225) list, probably on the basis of Chapin's earlier statement, but it remains to be demonstrated that it is a valid racial character. Our Bwamba series negates that possibility.

Of the 11 examples collected in the Bwamba Forest, only one had enlarged gonads, a male taken on June 13; two other males, taken on June 28 and July 3, showed slight testicular swelling; all the others had small "resting" gonads.

Because of the excessive rarity of this bird in museum collections, it seems worthwhile to put on record the dimensions of all 14 of our specimens. Nine males from Bwamba have wing lengths of 52.2, 54, 54.3, 54.9, 55, 55, 55.1, 55.2, and 56.1 (average 54.6); tail 22.2, 22.3, 22.7, 22.8, 23.3, 23.3, 23.7, 24.2, 24.3 (average 23.2); bill from anterior end of nostril to tip of maxilla 23.7, 25.0, 25.3, 25.8, 26.7, 26.9, 27.2, 27.5 (average 26.1). Two males from Malabigambo Forest, Sango Bay, have wings 55.1, 56.4 (average 55.7); tail 22.3, 24.6 (average 23.4); bill, as above, 23.9, 24.0 (average 23.95). Three females from Bwamba have wings 53.5, 54.3, 57.6 (average 55.1); tail 21.6, 22.8, 23.7 (average 22.7); bill, as above, 25.1, 25.1, 25.6 (average 25.2 mm). Males weighed from 12.5 to 15 grams (average 13.8 grams); females weighed from 14 to 16 (average 14.9 grams). As may be seen from these figures, the females tend to have slightly longer wings, and to weigh more than the males.

LITERATURE CITED

- AMADON, DEAN. 1953. Avian systematics and evolution in the Gulf of Guinea. *Amer. Mus. Nat. Hist., Bull.* 100: 399-451.
- BENSON, C. W., AND M. P. STUART IRWIN. 1965. The birds of *Marquesia* thickets in northern Mwinilunga District, Zambia. *Arnoldia*, 1 (30): 1-4.
- CHAPIN, J. P. 1922. On the representatives of *Corythornis leucogaster* (Fraser) in the Cameroon and the Congo. *Ibis*, (11) 4: 440-445.
- . 1932. The birds of the Belgian Congo. Pt. I. *Amer. Mus. Nat. Hist., Bull.* 65: 1-756.
- . 1939. The birds of the Belgian Congo. Pt. II. *Amer. Mus. Nat. Hist., Bull.* 75: 1-632.
- FRIEDMANN, HERBERT. 1966. A contribution to the ornithology of Uganda. *Los Angeles Co. Mus. Nat. Hist., Bull., Science*, 3: 1-55.
- RAND, A. L., H. FRIEDMANN, AND M. A. TRAYLOR, JR. 1959. Birds from Gabon and Moyen Congo. *Fieldiana, Zool.*, 41: 221-411.
- SCHOUTEDEN, H. 1951. Die Vogels van Belgisch Congo en van Ruanda-Urundi. *Tervuren, Mus. van Belgisch Congo, Ann., Zool.*, (4) 3 (1): 1-176 (pp. 29-30).
- . 1953. Nouvelles notes sur *Corythornis leucogaster Leopardi* Dub. (Aves). *Rev. Zool. Bot. Africaines*, 48: 297-299.
- . 1968. La Faune Ornithologique du Kivu. I. Non Passereaux. *Tervuren, Mus. voor Midden-Afrika, Zool. Doc.* 12: 1-168 (pp. 121-122).
- SERLE, WILLIAM. 1950. A contribution to the ornithology of the British Cameroons. *Ibis*, 92: 343-376, 602-638.

- SNOW, D. W. 1950. The birds of Sao Tomé and Principe in the Gulf of Guinea. *Ibis*, 92: 579-595.
- WHITE, C. M. N. 1965. A revised checklist of African non-passerine birds. Lusaka, Government Printer, 299 pp.
- WILLIAMS, J. G. 1957. Four new bird records from eastern Africa. *Brit. Ornith. Club, Bull.*, 77: 159-160.

Accepted for publication January 17, 1969.